

licensed, or make a showing of substantial service in their licensed area within five years of being licensed. Population is defined as the 1990 population census. Licensees may elect to use the 2000 population census to determine the five-year construction requirement. Failure by any licensee to meet these requirements will result in forfeiture of the license and the licensee will be ineligible to regain it.

(c) Licensees must file maps and other supporting documents showing compliance with the respective construction requirements within the appropriate five- and ten-year benchmarks of the date of their initial licenses.

§ 24.229 Frequencies.

The frequencies available in the Broadband PCS service are listed in this section in accordance with the frequency allocations table of § 2.106 of this chapter.

(a) The following frequency blocks are available for assignment on an MTA basis:

Block A: 1850–1865 MHz paired with 1930–1945 MHz; and

Block B: 1870–1885 MHz paired with 1950–1965 MHz.

(b) The following frequency blocks are available for assignment on a BTA basis:

Block C: 1895–1910 MHz paired with 1975–1990 MHz;

Block D: 1865–1870 MHz paired with 1945–1950 MHz;

Block E: 1885–1890 MHz paired with 1965–1970 MHz; and

Block F: 1890–1895 MHz paired with 1970–1975 MHz.

[59 FR 32854, June 24, 1994, as amended at 60 FR 13917, Mar. 15, 1995; 60 FR 26375, May 17, 1995; 61 FR 33868, July 1, 1996; 62 FR 660, Jan. 6, 1997]

§ 24.232 Power and antenna height limits.

(a) Base stations are limited to 1640 watts peak equivalent isotropically radiated power (e.i.r.p.) with an antenna height up to 300 meters HAAT. See § 24.53 for HAAT calculation method. Base station antenna heights may exceed 300 meters with a corresponding reduction in power; see Table 1 of this

section. In no case may the peak output power of a base station transmitter exceed 100 watts. The service area boundary limit and microwave protection criteria specified in § 24.236 and § 24.237 apply.

TABLE 1.—REDUCED POWER FOR BASE STATION ANTENNA HEIGHTS OVER 300 METERS

HAAT in meters	Maximum e.i.r.p. (watts)
≤300	1,640
≤500	1,070
≤1,000	490
≤1,500	270
≤2,000	160

(b) Mobile/portable stations are limited to 2 watts e.i.r.p. peak power and the equipment must employ means to limit the power to the minimum necessary for successful communications.

(c) Peak transmit power must be measured over any interval of continuous transmission using instrumentation calibrated in terms of an rms-equivalent voltage. The measurement results shall be properly adjusted for any instrument limitations, such as detector response times, limited resolution bandwidth capability when compared to the emission bandwidth, sensitivity, *etc.*, so as to obtain a true peak measurement for the emission in question over the full bandwidth of the channel.

§ 24.235 Frequency stability.

The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.

§ 24.236 Field strength limits.

The predicted or measured median field strength at any location on the border of the PCS service area shall not exceed 47 dBuV/m unless the parties agree to a higher field strength.

§ 24.237 Interference protection.

(a) All licensees are required to coordinate their frequency usage with the co-channel or adjacent channel incumbent fixed microwave licensees in the 1850–1990 MHz band. Coordination must occur before initiating operations from any base station. Problems that arise during the coordination process

are to be resolved by the parties to the coordination. Licensees are required to coordinate with all users possibly affected, as determined by Appendix I to this subpart E (Appendix E of the Memorandum Opinion and Order, GEN Docket No. 90–314, FCC 94–144; TIA Telecommunications Systems Bulletin 10-F, “Interference Criteria for Microwave Systems,” May 1994, (TSB10-F)); or an alternative method agreed to by the parties.

(b) The results of the coordination process need to be reported to the Commission only if the parties fail to agree. Because broadband PCS licensees are required to protect fixed microwave licensees in the 1850–1990 MHz band, the Commission will be involved in the coordination process only upon complaint of interference from a fixed microwave licensee. In such a case, the Commission will resolve the issues.

(c) In all other respects, coordination procedures are to follow the requirements of §101.103(d) of this chapter to the extent that these requirements are not inconsistent with those specified in this part.

(d) The licensee must perform an engineering analysis to assure that the proposed facilities will not cause interference to existing OFS stations within the coordination distance specified in Table 2 of a magnitude greater than that specified in the criteria set forth in paragraph (e) and (f) of this section, unless there is prior agreement with the affected OFS licensee. Interference calculations shall be based on the sum of the power received at the terminals of each microwave receiver from all of the applicant's current and proposed PCS operations.

TABLE 2.—COORDINATION DISTANCES IN KILOMETERS
[PCS Base Station Antenna HAAT in Meters]

e.i.r.p. (W)	5	10	20	50	100	150	200	250	300	500	1000	1500	2000
0.1	90	93	99	110	122	131	139	146	152	173	210	239	263
0.5	96	100	105	116	128	137	145	152	158	179	216	245	269
1	99	103	108	119	131	140	148	155	161	182	219	248	272
2	120	122	126	133	142	148	154	159	164	184	222	250	274
5	154	157	161	168	177	183	189	194	198	213	241	263	282
10	180	183	187	194	203	210	215	220	225	240	268	291	310
20	206	209	213	221	229	236	242	247	251	267	296	318	337
50	241	244	248	255	264	271	277	282	287	302	331	354	374
100	267	270	274	282	291	297	303	308	313	329	358	382	401
200	293	296	300	308	317	324	330	335	340	356	386	409	.....
500	328	331	335	343	352	359	365	370	375	391	421	.....	.....
1000	354	357	361	369	378	385	391	397	402	418	.....	.....	.....
1200	361	364	368	376	385	392	398	404	409	.....	.....	.....	.....
1640	372	375	379	388	397	404	410	416	421	.....	.....	.....	.....

Note: If actual value does not match table values, round to the closest higher value on this table. See Section 24.53 for HAAT calculation method.

(e) For microwave paths of 25 kilometers or less, interference determinations shall be based on the C/I criteria set forth in TIA Telecommunications Systems Bulletin 10-F, “Interference Criteria for Microwave Systems,” May 1994 (TSB10-F).

(f) For microwave paths longer than 25 kilometers, the interference protection criterion shall be such that the interfering signal will not produce more than 1.0 dB degradation of the practical threshold of the microwave receiver for analog system, or such that the interfering signal will not cause an increase in the bit error rate

(BER) from 10E–6 to 10E–5 for digital systems.

(g) The development of the C/I ratios and interference criteria specified in paragraphs (e) and (f) of this section and the methods employed to compute the interfering power at the microwave receivers shall follow generally acceptable good engineering practices. The procedures described for computing interfering signal levels in (Appendix I to this subpart E Appendix E of the Memorandum Opinion and Order, GEN Docket No. 90–314, FCC 94–144) shall be applied. Alternatively, procedures for determining interfering signal levels

and other criteria as may be developed by the Electronics Industries Association (EIA), the Institute of Electrical and Electronics Engineers, Inc. (IEEE), the American National Standards Institute (ANSI) or any other recognized authority will be acceptable to the Commission.

[59 FR 32854, June 24, 1994, as amended at 61 FR 29691, June 21, 1996]

§ 24.238 Emission limits.

(a) On any frequency outside a licensee's frequency block, the power of any emission shall be attenuated below the transmitter power (P) by at least $43 + 10 \log (P)$ dB.

(b) Compliance with these provisions is based on the use of measurement instrumentation employing a resolution bandwidth of 1 MHz or greater. However, in the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed. The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

(c) When measuring the emission limits, the nominal carrier frequency shall be adjusted as close to the licensee's frequency block edges, both upper and lower, as the design permits.

(d) The measurements of emission power can be expressed in peak or average values, provided they are expressed in the same parameters as the transmitter power.

(e) When an emission outside of the authorized bandwidth causes harmful interference, the Commission may, at its discretion, require greater attenuation than specified in this section.

POLICIES GOVERNING MICROWAVE RELOCATION FROM THE 1850-1990 MHZ BAND

§ 24.239 Cost-sharing requirements for broadband PCS.

Frequencies in the 1850-1990 MHz band listed in § 101.147(c) of this chapter have been allocated for use by PCS. In accordance with procedures specified in

§§ 101.69 through 101.81 of this chapter, PCS entities (both licensed and unlicensed) are required to relocate the existing Fixed Microwave Services (FMS) licensees in these bands if interference to the existing FMS operations would occur. All PCS entities who benefit from spectrum clearance by other PCS entities or a voluntarily relocating microwave incumbent, must contribute to such relocation costs. PCS entities may satisfy this requirement by entering into private cost-sharing agreements or agreeing to terms other than those specified in § 24.243. However, PCS entities are required to reimburse other PCS entities or voluntarily relocating microwave incumbents that incur relocation costs and are not parties to the alternative agreement. In addition, parties to a private cost-sharing agreement may seek reimbursement through the clearinghouse (as discussed in § 24.241) from PCS entities that are not parties to the agreement. The cost-sharing plan is in effect during all phases of microwave relocation specified in § 101.69 of this chapter.

[62 FR 12757, Mar. 18, 1997]

§ 24.241 Administration of the Cost-Sharing Plan.

The Wireless Telecommunications Bureau, under delegated authority, will select an entity to operate as a neutral, not-for-profit clearinghouse. This clearinghouse will administer the cost-sharing plan by, *inter alia*, maintaining all of the cost and payment records related to the relocation of each link and determining the cost-sharing obligation of subsequent PCS entities. The cost-sharing rules will not take effect until an administrator is selected.

[61 FR 29691, June 12, 1996]

§ 24.243 The cost-sharing formula.

A PCS relocater who relocates an interfering microwave link, i.e. one that is in all or part of its market area and in all or part of its frequency band or a voluntarily relocating microwave incumbent, is entitled to pro rata reimbursement based on the following formula: